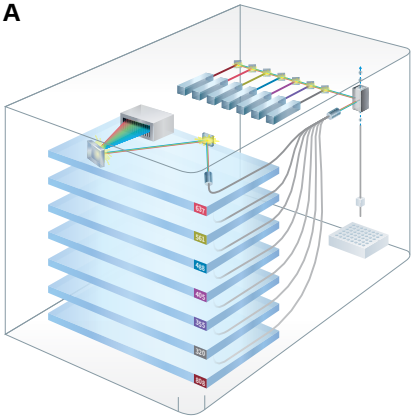
# Increasing Panel Design Flexibility Using the 320-nm Laser on the ID7000™ Spectral Cell Analyzer

The Sony ID7000™ spectral cell analyzer may be equipped with a 320-nm laser to expand the way biological samples are analyzed, ensuring accurate visualization of fluorescent populations. In this article, we provide an overview of the method and benefits of spectral analysis with emission signals from 320-nm laser excitation, using currently available fluorochromes, compared to the same panel without the 320-nm laser.

## Introduction to the ID7000 spectral cell analyzer optics

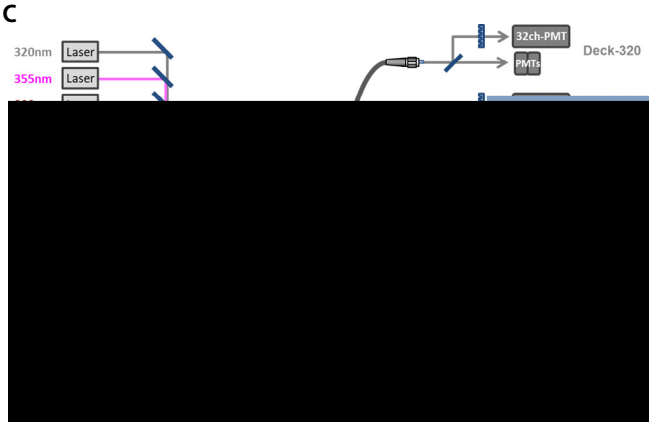
The ID7000 spectral cell analyzer is built using an innovative design that may include up to seven excitation lasers (320, 355, 405, 488, 561, 637, and 808 nm), optical fibers, diffraction grating, 32-channel array photomultiplier tubes (PMTs), single-channel PMTs, and a standard AutoSampler **(Figure 1A)**. A photograph of the excitation laser module is shown in **Figure 1B**. The optics schematic diagram is shown in **Figure 1C**. The excitation lasers are aligned as spots, which are spatially separated for all seven lasers. Fluorescence emission is captured by optical fibers and delivered to each detection deck. A diffraction grating was introduced to disperse the emission fluorescence signal. A custom micro lens array assembly then focuses each band of light onto a specific channel of the PMT array, which prevents loss of fluorescent photons to a boundary mask. **Figure 1D** shows a detection optics map, which highlights the relationship between wavelengths and PMT channels. The 32-channel PMTs and single-channel PMTs detect light from 360 to 920 nm. The detection range for 320-nm excitation is from 360 to 840 nm with a total of 35 PMT channels available.

A



B

C




D

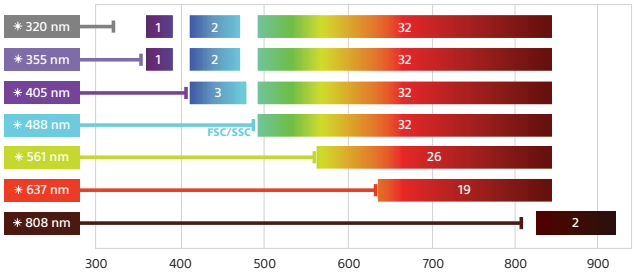



**Figure 1.** Technical overview of the ID7000 system optics